WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor device, comprising the steps of:

(a) depositing an interlayer insulator film on a substrate including a plurality of conductive layers;

(b) forming a plurality of contact holes running through the interlayer insulator film to reach respective ones of the plurality of conductive layers, each of the contact holes having a tapered portion at an upper end thereof;

(c) depositing a conductive material film on the interlayer insulator film so as to fill the plurality of contact holes;

(d) removing the conductive material film until a surface of the interlayer insulator film is exposed so as to form a plurality of plugs made of the conductive material film filling the plurality of contact holes; and

(e) removing a portion of the interlayer insulator film, which has been exposed in the step (d), so as to remove the tapered portions.

2. A method for manufacturing a semiconductor device, comprising the steps of:

(a) depositing an interlayer insulator film on a substrate including a plurality of conductive layers;

(b) depositing a first conductive material film on the substrate;

(c) forming a plurality of contact holes running through the first conductive material film and the interlayer insulator film to reach respective ones of the plurality of conductive layers;

(d) depositing a second conductive material film on the first conductive material film so as to fill the plurality of contact holes; and

(e) removing the second conductive material film and the first conductive material film until a surface of the interlayer insulator film is exposed so as to form a plurality of plugs which are made of the conductive material film filling the plurality of contact holes.

3. A method for manufacturing a semiconductor device, comprising the steps of:

(a) depositing an interlayer insulator film on a substrate including a plurality of conductive layers;

(b) forming a plurality of contact holes running through the interlayer insulator film to reach respective ones of the plurality of conductive layers, each of the contact holes having a tapered portion at an upper end thereof;

(c) removing a portion of the interlayer insulator film so as to remove the tapered portions;

(d) depositing a conductive material film on the interlayer insulator film so as to fill the plurality of contact holes; and

(e) removing the conductive material film until a surface of the interlayer insulator film is exposed so as to form a plurality of plugs which are made of the conductive material film filling the plurality of contact holes.

4. The method for manufacturing a semiconductor device of claim 3, wherein in the step (c), the tapered portions are removed by etching or chemical mechanical polishing.

5. A method for manufacturing a semiconductor device, comprising the steps of:

(a) depositing an interlayer insulator film on a substrate including a plurality of conductive layers;

(b) forming a plurality of contact holes running through the interlayer insulator film to reach respective ones of the plurality of conductive layers, each of the contact holes having a tapered portion at an upper end thereof;

(c) forming an organic material film so as to fill the plurality of contact holes;

(d) removing a portion of the interlayer insulator film so as to remove the tapered portions;

(e) removing the organic material film;

(f) depositing a conductive material film on the interlayer insulator film so as to fill the plurality of contact holes;

(g) removing the conductive material film until a

surface of the interlayer insulator film is exposed so as to form a plurality of plugs which are made of the conductive material film filling the plurality of contact holes.

6. The method for manufacturing a semiconductor device of claim 5, wherein in the step (d), the tapered portions are removed by etching or chemical mechanical polishing.

7. A method for manufacturing a semiconductor device, comprising the steps of:

(a) depositing an interlayer insulator film on a substrate including a plurality of conductive layers;

(b) applying a resist film on the interlayer insulator film and patterning the resist film so as to from an etching mask having a plurality of contact hole patterns therein;

(c) performing an etching process using the etching mask so as to form a plurality of contact holes running through the interlayer insulator film to reach respective ones of the plurality of conductive layers;

(d) depositing a conductive material film on the interlayer insulator film so as to fill the plurality of contact holes; and

(e) removing the conductive material film until a surface of the interlayer insulator film is exposed so as to form a plurality of plugs which are made of the conductive material film filling the plurality of contact holes,

wherein in the step (b), the resist film is applied to a thickness such that upper ends of the plurality of contact holes will not be tapered in the step (c).

8. The method for manufacturing a semiconductor device of claim 7, wherein in the step (c), a ratio of an etch rate for the interlayer insulator film with respect to an etch rate for the resist film located on a side wall of each of the contact holes is 3.5 or more.

9. A semiconductor device, comprising:

a substrate including a plurality of conductive layers;

an interlayer insulator film provided on the substrate; and

a plurality of plugs running through the interlayer insulator film to reach respective ones of the plurality of conductive layers,

wherein any adjacent two of the plurality of plugs are separated from each other by the interlayer insulator film, and a minimum width of the interlayer insulator film existing between two adjacent plugs is 0.30 μm or less.